



UNITED STATES PATENT AND TRADEMARK OFFICE

UNITED STATES DEPARTMENT OF COMMERCE
United States Patent and Trademark Office
Address: COMMISSIONER FOR PATENTS
P.O. Box 1450
Alexandria, Virginia 22313-1450
www.uspto.gov

APPLICATION NO.	FILING DATE	FIRST NAMED INVENTOR	ATTORNEY DOCKET NO.	CONFIRMATION NO.
10/676,833	10/01/2003	Jeffrey J. Darcy	E0295.70171US01	3777

23628 7590 03/24/2006

WOLF GREENFIELD & SACKS, PC
FEDERAL RESERVE PLAZA
600 ATLANTIC AVENUE
BOSTON, MA 02210-2206

EXAMINER

BATAILLE, PIERRE MICHE

ART UNIT	PAPER NUMBER
----------	--------------

2186

DATE MAILED: 03/24/2006

Please find below and/or attached an Office communication concerning this application or proceeding.

Office Action Summary	Application No.	Applicant(s)	
	10/676,833	DARCY, JEFFREY J.	
	Examiner	Art Unit	
	Pierre-Michel Bataille	2186	

-- The MAILING DATE of this communication appears on the cover sheet with the correspondence address --

Period for Reply

A SHORTENED STATUTORY PERIOD FOR REPLY IS SET TO EXPIRE 3 MONTH(S) OR THIRTY (30) DAYS, WHICHEVER IS LONGER, FROM THE MAILING DATE OF THIS COMMUNICATION.

- Extensions of time may be available under the provisions of 37 CFR 1.136(a). In no event, however, may a reply be timely filed after SIX (6) MONTHS from the mailing date of this communication.
- If NO period for reply is specified above, the maximum statutory period will apply and will expire SIX (6) MONTHS from the mailing date of this communication.
- Failure to reply within the set or extended period for reply will, by statute, cause the application to become ABANDONED (35 U.S.C. § 133). Any reply received by the Office later than three months after the mailing date of this communication, even if timely filed, may reduce any earned patent term adjustment. See 37 CFR 1.704(b).

Status

- 1) ☒ Responsive to communication(s) filed on 01 October 2003.
- 2a) ☐ This action is **FINAL**. 2b) ☒ This action is non-final.
- 3) ☐ Since this application is in condition for allowance except for formal matters, prosecution as to the merits is closed in accordance with the practice under *Ex parte Quayle*, 1935 C.D. 11, 453 O.G. 213.

Disposition of Claims

- 4) ☒ Claim(s) 1-96 is/are pending in the application.
- 4a) Of the above claim(s) _____ is/are withdrawn from consideration.
- 5) ☐ Claim(s) _____ is/are allowed.
- 6) ☒ Claim(s) 1-4, 6, 9-13, 15-20, 23-27, 29-34, 37-41, 43-47, 50-53 and 55-96 is/are rejected.
- 7) ☒ Claim(s) 7, 8, 14, 21, 22, 28, 35, 36, 42, 48, 49 and 54 is/are objected to.
- 8) ☐ Claim(s) _____ are subject to restriction and/or election requirement.

Application Papers

- 9) ☐ The specification is objected to by the Examiner.
- 10) ☒ The drawing(s) filed on 01 October 2003 is/are: a) ☐ accepted or b) ☒ objected to by the Examiner.
Applicant may not request that any objection to the drawing(s) be held in abeyance. See 37 CFR 1.85(a).
Replacement drawing sheet(s) including the correction is required if the drawing(s) is objected to. See 37 CFR 1.121(d).
- 11) ☐ The oath or declaration is objected to by the Examiner. Note the attached Office Action or form PTO-152.

Priority under 35 U.S.C. § 119

- 12) ☐ Acknowledgment is made of a claim for foreign priority under 35 U.S.C. § 119(a)-(d) or (f).
- a) ☐ All b) ☐ Some * c) ☐ None of:
1. ☐ Certified copies of the priority documents have been received.
 2. ☐ Certified copies of the priority documents have been received in Application No. _____.
 3. ☐ Copies of the certified copies of the priority documents have been received in this National Stage application from the International Bureau (PCT Rule 17.2(a)).
- * See the attached detailed Office action for a list of the certified copies not received.

Attachment(s)

- | | |
|--|---|
| 1) <input checked="" type="checkbox"/> Notice of References Cited (PTO-892) | 4) <input type="checkbox"/> Interview Summary (PTO-413)
Paper No(s)/Mail Date. _____ |
| 2) <input type="checkbox"/> Notice of Draftsperson's Patent Drawing Review (PTO-948) | 5) <input type="checkbox"/> Notice of Informal Patent Application (PTO-152) |
| 3) <input type="checkbox"/> Information Disclosure Statement(s) (PTO-1449 or PTO/SB/08)
Paper No(s)/Mail Date _____ | 6) <input type="checkbox"/> Other: _____ |

DETAILED ACTION

1. The present Office Action is taken in relation to examination of Application 10/676,833 with effective filing dated October 1, 2003. Claims 1-96 are present in the application under prosecution.

Specification

2. The lengthy specification has not been checked to the extent necessary to determine the presence of all possible minor errors. Applicant's cooperation is requested in correcting any errors of which applicant may become aware in the specification.

3. Figure 1 should be designated by a legend such as --Prior Art-- because only that which is old is illustrated (see pages 1 and 2 of the disclosure; the specification discloses an exemplary figure of a computer system). See MPEP § 608.02(g). Corrected drawings in compliance with 37 CFR 1.121(d) are required in reply to the Office action to avoid abandonment of the application. The replacement sheet(s) should be labeled "Replacement Sheet" in the page header (as per 37 CFR 1.84(c)) so as not to obstruct any portion of the drawing figures. If the changes are not accepted by the examiner, the applicant will be notified and informed of any required corrective action in the next Office action. The objection to the drawings will not be held in abeyance.

Claim Rejections - 35 USC § 112

4. The following is a quotation of the second paragraph of 35 U.S.C. 112:

The specification shall conclude with one or more claims particularly pointing out and distinctly claiming the subject matter which the applicant regards as his invention.

Art Unit: 2186

5. Claims 9-10, 23-24, 37-38, 50-51, 61, 75, and 89 are rejected under 35 U.S.C. 112, second paragraph, as being indefinite for failing to particularly point out and distinctly claim the subject matter which applicant regards as the invention.

The limitation (claim 9) "at least two software cache comprise a number of software caches" renders the claim indefinite. Claim 10, is rejected for incorporating the defects of rejected claim 9.

Claims 23-24, 37-38, 50-51, 61, 75, and 89 carry the defects as noted with respect to claims 9-10 above, therefore should be addressed as well.

Claim Rejections - 35 USC § 103

6. The following is a quotation of 35 U.S.C. 103(a) which forms the basis for all obviousness rejections set forth in this Office action:

(a) A patent may not be obtained though the invention is not identically disclosed or described as set forth in section 102 of this title, if the differences between the subject matter sought to be patented and the prior art are such that the subject matter as a whole would have been obvious at the time the invention was made to a person having ordinary skill in the art to which said subject matter pertains. Patentability shall not be negated by the manner in which the invention was made.

7. Claims 1-4, 6, 9-13, 15-20, 23-27, 29-34, 37-41, 43-47, 50-53, and 55-96 are rejected under 35 U.S.C. 103(a) as being unpatentable over US 2005,0125592 (Sawdey).

With respect to claims 1, 14, 29, 43, 55, 69, and 83, Sawdey discloses digital data processing device having a computer cache memory subsystem, comprising: at least one processor; a memory; a first cache containing a plurality of addressable associativity sets; and a second cache containing a plurality of addressable associativity sets [Fig. 3, Par. 0030, 0038]; wherein said associativity sets of said first cache and said

associativity sets of said second cache correspond to a plurality of congruence groups, i.e. each respective associativity set of said first cache are allocated among the plurality of associativity sets in the second cache using a hashing function of at least some address bits other than address bits used to determine the respective associativity set of said first cache [abstract; Par. 0015, Par. 0064; Par 0050-0051]. Sawdey suggests the design of many hierarchical database caching structure and other software data structures [Par. 0044], but fails to specifically teach the creation of software cache hierarchy. However, Design and Performance of a General-Purpose Software Cache (Iyengar) teaches the creation of a hierarchical software cache (page 329). Therefore, it would have been obvious to one of ordinary skill in the art, having both teaching before him at the time of the invention to combine the computer cache subsystem to the dynamic creation of hierarchical software cache, as taught by Iyengar, for the benefit of improving performance of the system which, as well, providing caching of frequently accessed data and providing features such as invalidation of cached data replacement strategies.

With respect to claims 2, 16, 30, 44, 56, 70, and 84, Sawdey discloses first cache and second cache being set associative caches [Par. 0011].

With respect to claims 3, 13, 17, 27, 31, 41, 46, 58, 68, 72, 82, 86, and 96, Sawdey discloses increasing the available associativity of the lower level cache for cast-outs from a hot associativity set in the higher level cache, a cache miss in the upper

level cache to be satisfied from the lower level cache with a consequent reduction in average time [Par. 0015].

With respect to claims 4-5, 18-19, 32-33, 59-60, 73-74, and 87-88, Sawdey discloses data not to be duplicated in the higher and lower level caches, a cache line being loaded to the higher level cache upon a cache miss, either from the lower level cache, or from some other source, by-passing the lower level cache [Par. 0012].

With respect to claims 6, 9-12, 20, 23-26, 34, 37-40, 47, 50-53, 61-67, 75-81, and 89-95, Iyengar teaches configuring software cache without reconfiguring any application executing on the system using the cache, API function to manage the cache allowing application program to effectively use the cache and keeping complex data currently in cache [page 330-331].

Allowable Subject Matter

8. Claims 7-8, 14, 21-22, 28, 35-36, 42, 48-49, and 54 are objected to as being dependent upon a rejected base claim, but would be allowable if rewritten in independent form including all of the limitations of the base claim and any intervening claims.

Conclusion

9. The prior art made of record and not relied upon is considered pertinent to applicant's disclosure.

O"Optimazin Software Cache-Coherent Cluster Architecture", Xiaohan Qin et al,
Conference ACM/IEEE Computer Society, 1998.

Design and Performance of a General-Purpose Software Cache" Arun Iyengar,
IEEE transactions on Computers, page(s) 329-336,1999.

10. Any inquiry concerning this communication or earlier communications from the
examiner should be directed to Pierre-Michel Bataille whose telephone number is (571)
272-4178. The examiner can normally be reached on Mon-Fri (8:00A to 4:30P).

If attempts to reach the examiner by telephone are unsuccessful, the examiner's
supervisor, Matthew M. Kim can be reached on (571) 272-4182. The fax phone number
for the organization where this application or proceeding is assigned is 571-273-8300.

Information regarding the status of an application may be obtained from the
Patent Application Information Retrieval (PAIR) system. Status information for
published applications may be obtained from either Private PAIR or Public PAIR.
Status information for unpublished applications is available through Private PAIR only.
For more information about the PAIR system, see <http://pair-direct.uspto.gov>. Should
you have questions on access to the Private PAIR system, contact the Electronic
Business Center (EBC) at 866-217-9197 (toll-free).


Pierre-Michel Bataille
Primary Examiner
Art Unit 2186

March 16, 2006

**PIERRE BATAILLE
PRIMARY EXAMINER**